DOCUMENT RESUME

ED 425 337 CE 077 715

AUTHOR	Lukin, Annabelle
TITLE	Effective Communication and Training. A Guide for Workplace Trainers in the Australian Coal Industry.
INSTITUTION	Adult Migrant English Service, Sydney, New South Wales (Australia).
SPONS AGENCY	Australian National Training Authority, Brisbane.; National Centre for Vocational Education Research, Leabrook (Australia).
PUB DATE	1998-00-00
NOTE	65p.
AVAILABLE FROM	New South Wales Mining Industry Training Advisory Body, P.O. Box A2616, Sydney South, New South Wales 2000, Australia.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Academic Standards; Adult Basic Education; Case Studies; Classroom Techniques; *Coal; *Communication Skills; Competence; Computer Literacy; Curriculum Development; Delivery Systems; Education Work Relationship; Educational Needs; Foreign Countries; Industrial Training; *Integrated Curriculum; *Literacy Education; *Mining; Numeracy; Student Evaluation; Teaching Guides; Training Methods; *Workplace Literacy
IDENTIFIERS	*Australia

ABSTRACT

This guide is designed to help workplace trainers in Australia's coal industry improve coal miners' operator and general communication skills through a curriculum that integrates training in language, literacy, and numeracy. The following topics are discussed in the guide's seven sections: the changing workplace (changing work environment; changing roles; changing language, literacy, and numeracy demands of the job); workplace communication skills training (numeracy skills needed by operators, workplace trainers as numeracy teachers); language and literacy in the workplace (definitions; spoken communication, literacy, and computer literacy skills needed by operators; workplace trainers as language and literacy teachers); writing in plain English (purpose, audience, text structure, grammar, thinking about words and phrases); training tips (characteristics of effective trainers, structure of a training session); designing integrated training (identifying language, literacy, and numeracy competence; recognizing language, literacy, and numeracy in competency standards and incorporating them into training delivery and assessment); and providing workplace communication skills training (case studies, program development). Appended are: following: 7 references; addresses of 7 mining training advisory boards; a contact for further information on funding for language, literacy, and numeracy provision; the address to contact New South Wales (NSW) Adult Migrant English Service (AMES); 12 useful resources on language, literacy, and numeracy. (MN)

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A guide for

trainers in the Australian coal industry

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AMES

EFFECTIVE Communication AND Training

A guide for **WORKPLACE** trainers in the Australian coal industry

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Published by NSW AMES
84-86 Mary St
Surry Hills, NSW 2010
Australia

Distributed by
NSW Mining ITAB
PO Box A2616
Sydney South, NSW 2000
Australia

Photographs provided courtesy of the Department of Mineral Resources.
Photographer: David Barnes.

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First published 1998

Cover and page design by Pamela Horsnell
Typesetting by Juno Creative Services

ACKNOWLEDGMENTS

I would like to thank the mines which participated in the project, leading to the development of this resource: Ulan Coal, Dartbrook Coal, Bulga Coal, Cumnock No. 1, and Powercoal. I would particularly like to thank the training personnel from these mines whose expertise was invaluable: Danny Ponton (Ulan), Carl Tinsley (Dartbrook), Greg Grant (Bulga), Michael Solomon (Cumnock) and Jeff Carlyle (Powercoal).

I would also like to thank Dave Johnson (Ulan), Glenn Randall (Dartbrook) for explaining the process of coal extraction in gruesome detail, Brian Trotman (Newcastle Mines Rescue Service) and Julianne McLeod (NSW AMES). Their generous assistance is warmly acknowledged.

Thanks to the project managers and steering commitee for their guidance and advice: Helen Joyce (NSW AMES), Noel Parish (NSW MITAB), Virginia Hilliard (ADITC), Jim Shaw, (NSW AMES WorkCom Services), Kath Brandon (ACL), Catherine MacIntosh (NSW MITAB), Steve Ferris (Powercoal). I would also like to acknowledge the generous and stimulating input provided by Professor Sue Willis, Murdoch University.

Thanks also to the following individuals who contributed time, knowledge and skills to the project including:

Andy Geiser (Ulan), Mark Harrower (Cooranbong), Mick Berry (Cooranbong), Monica Mitchell (QLD MITAB), Julie Gunter (QLD MITAB), Ken McLaughlin (Colltraining Pty Ltd.), Jo Nobelius (BHP, Cannington Project), Andy Young (Pacific Power), Arthur Soennichsen (Hunter Valley Training Company), Frouke de Reuver (NSW AMES), Michael Lukin, Jan Dillon (NSW TAFE), Sandy Smith (NSW TAFE), Linda Ross (NSW AMES), Susan Cornish (NSW AMES), Kaye Greenleaf, (NSW AMES) Kevin Millington (Cooranbong).

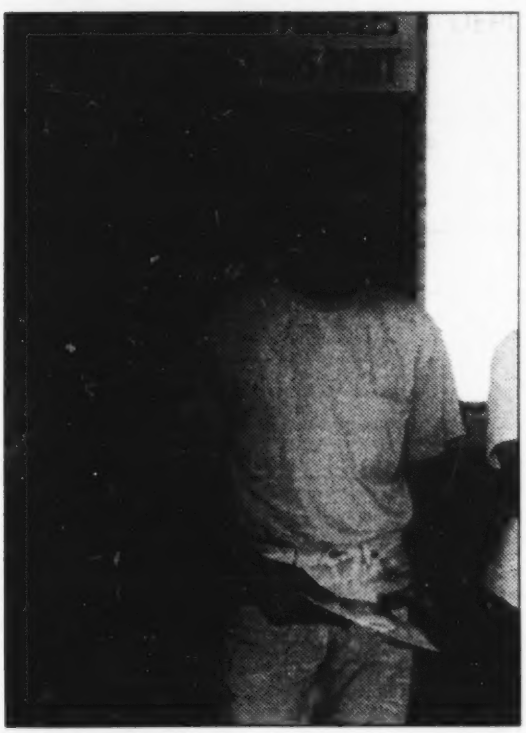
Thanks to Cumnock No. 1 for permission to reproduce the photo of operators in the CHPP. Thanks to Powercoal for permission to use their workplace communication skills program as a case study, and to Julianne Mcleod for the photograph in the introduction.

I would particularly like to thank Peter Gillis of Munmorah colliery whose story is the reason for this trainer's guide.

INTRODUCTION

Before I came to [the literacy and numeracy] class, I couldn't fill in a tag, I didn't even have a clue what was on the tag... Signs underground, there's all different signs been put up, and you think 'well what the hell are they, they've never been there before.' Now I can read the signs, danger signs and things like that ... I think Powercoal have benefited from me doing this program because now I can do my job underground safely.

Peter Gillis, miner driver, Munmorah Colliery, Powercoal



PETER GILLIS, MINER DRIVER AT MUNMORAH COLLIERY, RECEIVES AN AWARD FOR COMPETENCIES ACHIEVED IN POWERCOAL'S WORKPLACE COMMUNICATION SKILLS PROGRAM.

Why integrate language, literacy and numeracy into training?

The National Mining ITAB estimates that about one in five employees in the Coal Industry have difficulties with language, literacy and numeracy (National MITAB 1997). Improving the language, literacy and numeracy skills of operators will:

- improve safety by ensuring operators can read safety signs and notices and fill in danger tags
- maximise training effectiveness by developing operator confidence, learning-to-learn skills and language, literacy and numeracy skills
- support organisational change by improving operator communication skills

How can this guide help?

This guide is about how and why language, literacy and numeracy should be integrated into workplace training in the Coal Industry. It presents a range of strategies which can assist in improving operator and general communication skills at your mine. These strategies are listed below with the relevant sections of the guide:

■ Understand the communication demands and opportunities of your workplace	Numeracy in the workplace Language and literacy in the workplace
■ Communicate in plain English	Writing in plain English
■ Develop trainer skills	Training tips
■ Integrate language, literacy and numeracy into workplace training	Designing integrated training
■ Provide workplace communication skills programs	Providing workplace communication skills training
■ Decide on the kind of training that can be done in a workplace communication skills program	**7.1** Case study of a workplace communication skills program: Powercoal
■ Obtain financial assistance from the government to provide workplace communication skills training	**7.3** Setting up a workplace communication skills program

This guide has been written for:

- workplace trainers in the Coal Industry who want to know more about how to address the language, literacy and numeracy needs of their trainees
- managers and supervisors who want to know more about how to improve the effectiveness of communication in their mine
- training providers and consultants who provide training to the Coal Industry and who want to know more about how to address the language, literacy and numeracy needs of their trainees
- language, literacy and numeracy teachers who are delivering training in the Coal Industry and who need to know more about the language, literacy and numeracy demands of a coal mine.

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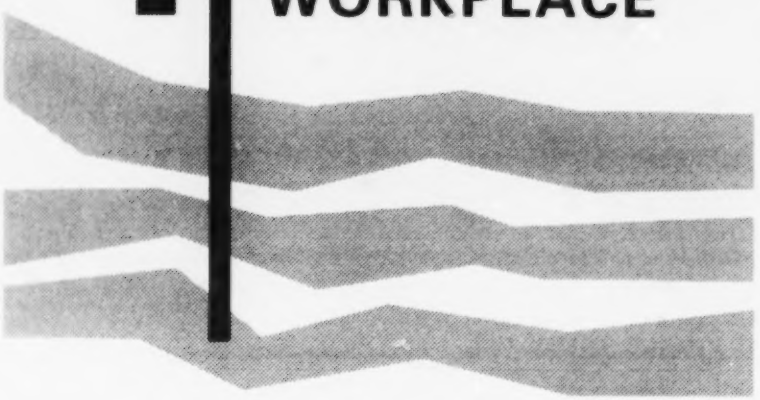
1 THE CHANGING WORKPLACE



1.1 The changing work environment

The Coal Industry is currently experiencing enormous changes which are driven by the need to stay competitive within global and domestic markets and in the face of falling coal prices. This has placed enormous pressure on individual mines to ensure greater resource and labour efficiency and productivity.

The ways in which mines are structured are changing and the roles of managers, supervisors and operators are becoming more complex. Maintaining a safe and competitive operation in a constantly changing environment is a sophisticated process. It means there is now a much greater emphasis on involving everyone in the business of running mines safely and productively.

Effective communication within and between all parts of a mine is obviously crucial to the process of implementing change. Changing the culture of a mine involves:

- developing a shared vision amongst all employees
- ensuring all employees understand the internal and external operating environment of the mine
- developing a more flexible and responsive workforce

Effective communication between operators, management and technical staff is now crucial to the operation of an efficient mine. Operators require more information about mining operations than they did in the past. They are also required to provide more information about mining operations to supervisory and technical staff.

1.2 Changing roles

In the Coal Industry many mines have recognised the need to redefine the role of the operator and to gain efficiencies through cross-skilling and multi-skilling. Not so long ago, operators simply operated a piece of machinery but now effective operators are highly skilled technicians who:

- make decisions as part of a team
- contribute to continuous improvement processes

- perform a greater range of tasks including basic maintenance
- understand how their work impacts on other processes in the mine
- take responsibility for personal safety
- understand the expectations of customers
- undertake ongoing training

1.3 Changing language, literacy and numeracy demands on the job

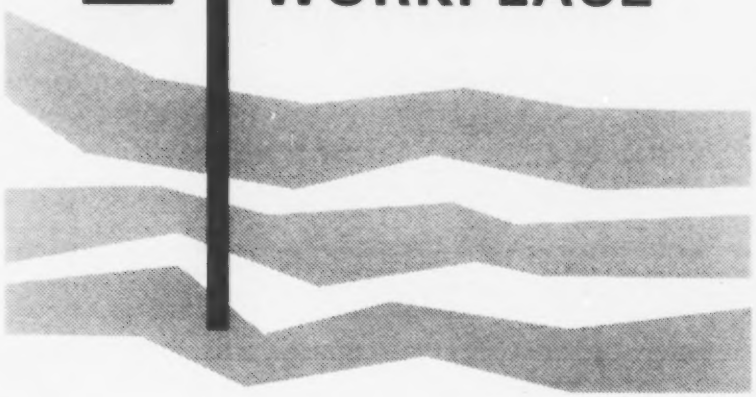
Employees in all industries now require a broader range of skills. Operators in the mining industry are no exception. Effective spoken and written communication skills and confidence with the numeracy skills and concepts which underpin their work are some of the important skills which all operators need.

DRAGLINE OPERATOR IN SINGLETON MINE

Many operators in the Coal Industry left school early and have not been involved in formal training for many years. Some of these operators have difficulty with routine communication tasks such as filling in danger tags, reading safety signs and understanding simple calculations.

Other operators have effective language, literacy and numeracy skills in a range of contexts but find the demands of some workplace texts such as training materials or the Mine Manager's Rules daunting.

2 NUMERACY IN THE WORKPLACE



2.1 What is numeracy?

Many people think of numeracy as simply a series of discrete mathematical concepts. However numeracy involves much more than this and being numerate is about knowing:

- **when to use maths** – this means knowing in which situations it is appropriate to apply mathematical knowledge
- **what maths to use** – this means having mathematical knowledge and being able to decide what is relevant to a particular context
- **how to do the maths** – this means having the confidence to apply the appropriate mathematical technique, which in turn relies on an inner sense of confidence in handling the strategies of mathematical thinking
- **how to use the results provided by the maths** – this means understanding what the application of maths to a particular situation reveals
- **how to judge the appropriateness of the maths used** – this means being able to reflect on and be critical of the way maths is used in a particular context

(Adapted from Open University, *Mathematical Aspects* and *National Statement on Mathematics for Australian Schools* in Willis, 1995)

When we talk about the numeracy needs of operators, we must keep in mind that we are talking about maths which will help operators to:

- develop a better understanding of their work environment
- understand how maths can help solve problems in local work contexts
- select relevant mathematical ideas to apply to a particular problem
- participate more effectively in training
- be more autonomous

2.2 How numerate do operators need to be?

A numeracy task can be a routine act of decoding and copying a number eg:

TASK 1

Recording machine hours on a form

- To perform this task, operators simply need to be able to copy the numbers.
- They do not need to understand the relationship between the symbols and the quantity.

TASK 2

Reading a pressure gauge

- To perform this task, operators simply need to know where the needle ought to be located.

If operators are only required to perform these decoding tasks, and can do them, then we can say that the operators have the numeracy skills necessary for the job. But consider the following work situations:

Situation 1

- An underground operation moves from being longwall operation to place change mining. A new Spontaneous Combustion Management Plan is developed and presented to the operators at a crew talk. The manager would like all operators to have a basic understanding of how the mine is ventilated and how early signs of spon com are detected and analysed.

Situation 2

- A company buys a new dragline and decides that training will be provided for all dragline operators. The effectiveness of the training will be monitored by comparing productivity measures (eg bcm/dig hour, average swing angle) before and after the training. The production supervisor thinks it is important for all operators to understand what is being measured and how it is being measured.

Situation 3

- An underground operation wants some operators to be able to undertake basic electrical maintenance tasks, such as checking flameproof enclosures or meggering a cable. A consultant is appointed to provide one week of training on basic electrical theory.

Situation 4

- At a crew talk a mine manager explains that while the number of metres per working hour is above the target, the metres per shift are below target. An operator asks how this could have happened.

In each of these situations, the operators involved require the kinds of numeracy skills outlined above. The operators need to know:

- when to use maths
- what maths to use
- how to do the maths
- how to use the results provided by the maths
- how to judge the appropriateness of the maths used

ERECTING ROOF SUPPORT, CHARBON COLLIERY

Let's examine Situation 1 and analyse the numeracy skills involved in dealing with the situation.

SITUATION 1	NUMERACY SKILLLS
■ An underground operation moves from being longwall operation to place change mining. A new Spontaneous Combustion Management Plan is developed and presented to the operators at a crew talk.	■ reading mine plans and ventilation diagrams which involves using scales, keys, symbols and knowing in what direction to read ■ reading a flowchart which indicates levels of response to indicators of spon com ■ understanding the measurement of volume and capacity which involves knowing cubic metres and litres and the conversion between them ■ understanding the effects of barometric variations to the risk of spon com which involves measuring atmospheric pressure and airflow ■ understanding how gas readings are taken and interpreted (%, ppm) ■ understanding relevant indicator ratios such as *CO Make* and Graham's Ratio which involve ratio and mathematical formulae ■ understanding the relationship between gas readings and relevant indicator ratios eg the relationship between concentration of CO and calculation of *CO Make*

There is no quick or simple answer to the question of how numerate coal miners need to be. You need to look at the work operators currently do at your mine and the vision that your mine has for the future of its operations.

2.3 What numeracy do operators at my mine need?

The numeracy required by operators will vary from mine to mine and you need to determine the numeracy required by operators at your particular site. The numeracy needs of operators at your mine will depend on a range of factors.

The starting point in mapping the numeracy needs is to consider the role of the operator at your site. Think about the following questions in relation to your mine:

- What vision does our mine have for the future?
- What new technologies are likely to impact on the work of operators?
- How is the work of the operator likely to change in the next few years?
- In what areas are operators being multi-skilled or cross-skilled?
- Do operators need to be more aware of their working environment?
- Do operators need to be able to solve problems? What kinds of problems?
- What training are operators likely to be undertaking over the next few years?
- How would improved numeracy skills enhance the current and future work of operators?
- How would improved numeracy skills enhance the training outcomes of operators?

Now read through the areas of maths awareness which follow, keeping in mind your answers to the questions above. Knowledge of these mathematical areas is likely to improve the work of operators. (Willis, 1995)

Number sense

Being able to operate comfortably with whole numbers of any practical size, common fractions and decimals, percentages, simple ratios and rates, and whole number powers. Being able to order negative numbers. Being able to look at a problem holistically by considering the relationships between numbers and operations in the context of the problem under investigation. Being able to evaluate the results of a calculation in relation to the context.

RELATED TASKS

The number system is used in a diverse range of tasks undertaken by operators eg: understanding coal quality specifications, understanding gas readings, comparing target and actual performance, understanding gradient, reading an MSDS, reading the angle of the shearer, etc.

Measurement sense

Being able to use basic measuring equipment and being familiar with standard metric units of length, mass, volume (capacity) and area. Being familiar with relevant imperial measures. Being able to use basic measuring equipment. Being able to interpret measures for pressure, amps, voltage, specific gravity, density, gas concentrations, specific energy. Being able to use familiar things for making estimates. Being able to read analogue and digital clocks, and make reasonable estimates of durations of time.

RELATED TASKS

Related tasks include understanding ventilation requirements, interpreting quality related measures (eg m/hour, bcm/dig hour), calculating downtime, taking a level measure etc.

Spatial sense

Being able to read mine maps and ventilation diagrams and interpret diagrams in plan and section view. Being able to use scale and key symbols to interpret a map or diagram. Being able to read complex flow charts.

Being able to recognise common 2D and 3D shapes within objects and environments and to visualise them in different orientations and from different points of view. Understanding and using geometric language such as parallel, perpendicular, diagonal, cross section, slope and rotation. Being able to use simple geometric properties of shapes and movements to deal with practical situations. Being able to operate comfortably with angles.

RELATED TASKS

Spatial understanding is necessary in a diverse range of tasks undertaken by operators such as reading maps, diagrams and flow charts, cutting a 90° breakaway, estimating angle of shovel to the face, and interpreting quality data such as average swing angle of dragline.

Data sense

Being able to extract numerical information from and interpret straightforward tables, diagrams and graphs. Being able to interpret and produce averages and simple probability statements.

RELATED TASKS

Related tasks include being able to read quality data expressed in tables, diagrams and graphs and understanding risk assessment processes.

Formula sense

Being familiar with and applying common measurement formula for lengths, areas and volumes. Being able to use familiar and unfamiliar formula which relate quantities. Being able to recognise common types of relationships through formulae.

Related tasks could include application of the following formulae to relevant workplace tasks or problems:

P=VI
Graham's ratio
CO Make
Pascal's Law P=F/area
Air pressure (P) = Resistance (R) x $(\text{Airflow})^2$

Maths learnt in isolation
will stay in isolation.

(Willis 1994: 8)

Maths will only be used by operators if they can see that it is relevant to the work that they do. If you are designing or delivering training that involves mathematical ideas and concepts, you need to relate it to the specific workplace contexts and tasks to which the maths can be applied.

2.4 The workplace trainer as numeracy teacher

As a workplace trainer you are confident about your training content and you can confidently apply the relevant maths to your sphere of work. You know when and what maths to use, how to use it, how to interpret the results and you are able to judge the appropriateness of the mathematical methods used. As a confident user of maths, you may find it hard to see why other people find it difficult to understand mathematical concepts.

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One role of an effective trainer is to understand how someone can learn to do maths and to apply it with ease. Integrating maths effectively into training means being able to:

- understand how a mathematical idea or concept was developed
- recognise when to use maths as a way of understanding something
- work out what a trainee is having trouble with by asking these questions:
  - Is it the concept?
  - Is it the symbolic notation?
  - Does the trainee understand why this maths is being used?
  - Does the trainee understand why this particular problem is being posed?
  - Does the trainee have literacy difficulties which prevents them from applying the maths they know?
- respond to trainee difficulties by reformulating your explanation
- help trainees make connections between problems and mathematical ways of solving them
- explain why a particular method or symbol is used
- provide opportunities for trainees, individually or with assistance, to talk through problems and the way maths is being applied to solve them

In the workplace mathematics can be applied immediately to work tasks and this makes it an ideal context for learning maths. Many operators will have had bad experiences of learning maths in educational contexts and you need to put your trainees at ease with maths by:

- believing that they can learn and apply maths
- encouraging them
- relating the maths to their workplace context
- being clear about what they need to understand
- using only that maths which you are prepared to explain to them - using maths which you do not explain can be very discouraging
- not underestimating what your operators can tackle

This does not mean that you are expected to do what a numeracy or maths teacher can do. When you are designing your training course, you may need to consider these questions:

- Do I need assistance from a trained numeracy teacher or consultant to assist me with integrating numeracy training into the vocational content?
- Do some of the trainees have significant difficulties with numeracy which will require assistance from a specialist numeracy teacher?

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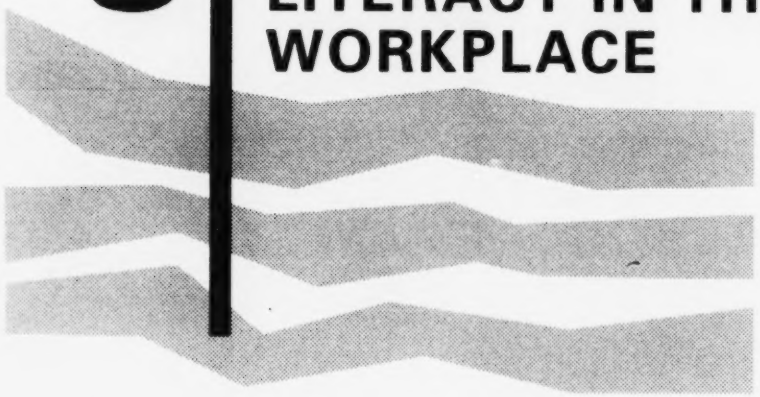
3 LANGUAGE AND LITERACY IN THE WORKPLACE



3.1 What is language?

Language is a resource which we use unconsciously all the time. We use language to interact with family, friends and workmates but we also use language to think about abstract ideas. The only time we stop to think about language is when something goes wrong. If communication breaks down then we want to know why.

We use language differently in different situations. For example, the language we use with workmates differs from the language we use with a police officer, a doctor or a prospective employer. The kind of language we use depends on:

■ **What** we are communicating about	When we talk about different topics we use different language.
■ **Who** we are communicating with and the type of relationship we have with them	The type of language we use depends on who we are communicating with. For example you do not use the same language to talk to your mother as you do to talk to a workmate.
■ **How** the communication takes place ie whether the communication is spoken or written	We use different language when we write and when we speak. For example if you are trying to solve a problem with a government department you will use different language on the phone than when you write a letter.
■ **What** form the communication takes	Communicating through a notice, a memo, an e-mail, a crew talk or a tool box talk all involve different types of language.

The key to making both written and spoken communication more effective is to take some time to think about the language that will be most appropriate in a particular context. This means:

- clearly defining the content of the communication
- knowing the audience for the communication
- selecting the most appropriate mode to communicate your message

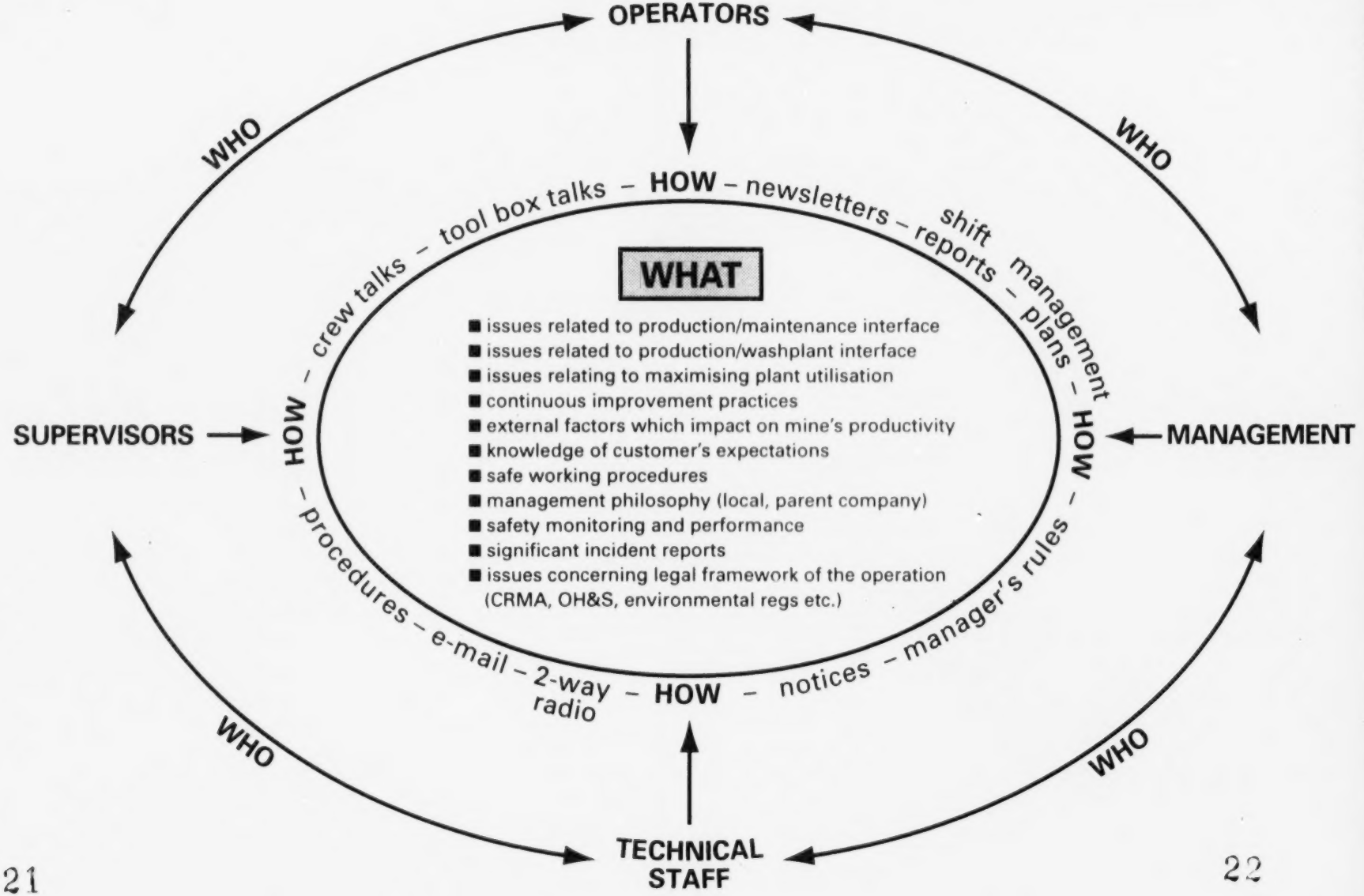

OPERATORS
WHO
WHO
HOW – newsletters – reports – shift management plans –
HOW – crew talks – tool box talks –
WHAT
■ issues related to production/maintenance interface
■ issues related to production/washplant interface
■ issues relating to maximising plant utilisation
■ continuous improvement practices
■ external factors which impact on mine's productivity
■ knowledge of customer's expectations
■ safe working procedures
■ management philosophy (local, parent company)
■ safety monitoring and performance
■ significant incident reports
■ issues concerning legal framework of the operation (CRMA, OH&S, environmental regs etc.)
SUPERVISORS
MANAGEMENT
HOW – procedures – e-mail – 2-way radio – HOW – notices – manager's rules –
WHO
WHO
TECHNICAL STAFF

FIGURE 3.1: COMMUNICATIONS IN A MINE

3.2 What is literacy?

We use the term literacy to refer to the skills needed to deal with written forms of communication, that is reading and writing. There is no single definition or measure of literacy because different people need to be able to read and write different types of texts. To be literate means to be able to read and write effectively for the things you need to do in your life.

As workplaces change, new literacy demands are placed on people. Most people need some assistance if they are asked to read or write an entirely new type of text. For example, if you were suddenly required to write briefing notes for a government minister or write a press release, you would either want someone to show you how to do it or you would look at some examples of this type of writing for guidance.

Reading means not just being able to say the words.
It means understanding what you read.

An important thing to remember is that literacy is not simply about decoding the letters and symbols on a page. For example, if you pick up a technical manual in an unfamiliar area, let's say rocket propulsion, you could read it in the sense of decoding the symbols and articulating the words, but it would be meaningless to you.

3.3 What spoken communication skills do operators need?

As mines restructure, operators are becoming more involved in the day to day running of the workplace. This means many operators are being expected to:

- understand more complex information presented in crew talks and tool box talks
- provide feedback on work progress, equipment performance etc
- contribute in team meetings
- participate in training
- take on training and assessment roles
- discuss various ways to improve job performance
- suggest improvements to work practices

3.4 What literacy skills do operators need?

There is widespread recognition in the industry that many operators have difficulties with literacy, and that this must be addressed if workplace reform is to be successful.

The literacy skills required by operators will vary from mine to mine but many operators are required to do some writing such as:

- filling in danger and out of service tags
- filling in 103 statutory inspection forms
- writing brief shift reports

While these tasks might not seem difficult, some operators do not have adequate literacy skills to complete these tasks. If you find it hard to believe that some operators may not be able to do these tasks, go to the Trainee case study in Part 7.2.

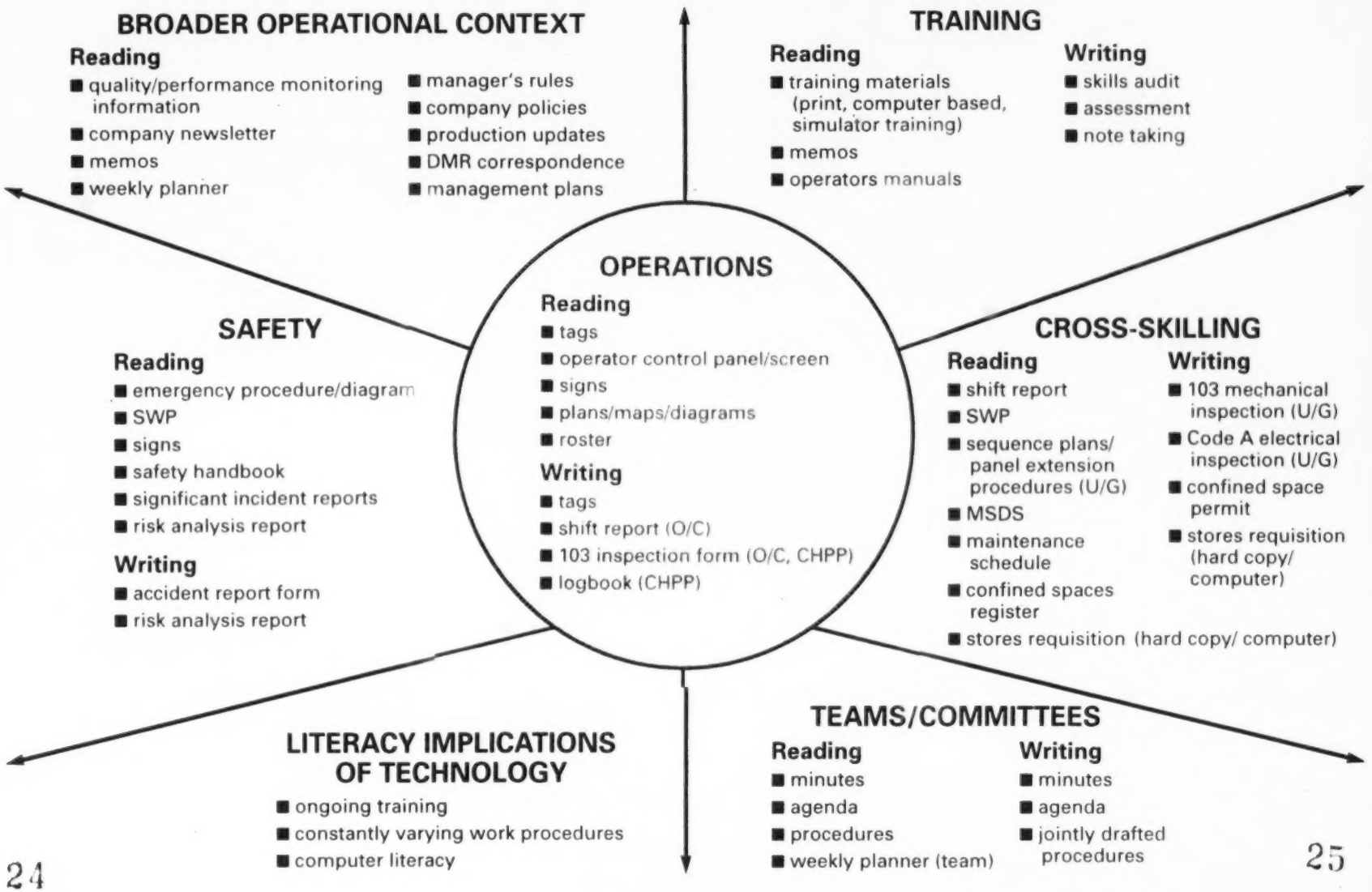


FIGURE 2: LITERACY DEMANDS ON MINING OPERATORS

All operators need to be able to read some texts. Some operators will need assistance to read basic texts such as forms, signs and a remote operation panel. Other operators may need assistance to read more complex texts such as safe working procedures, the manager's rule book and training materials.

Figure 2 provides a comprehensive list of written texts found in coal mines which most operators are expected to read. The texts appear under various headings:

Operations	■ The texts which appear under this heading are a minimal requirement for the safe operation of all mines. ■ Operators read and write these texts as a routine part of the job. ■ It is important to know whether all operators can fill in danger tags and read safety signs.
Training **Safety** **Cross-skilling** **Teams/committees** **Broader operational context** **Technology**	■ The texts listed under these headings are associated with various aspects of a mine's operations. ■ The extent to which all operators at your mine will need to be able to read and write these texts will depend on a number of factors such as: – how much training and cross-skilling is happening – whether you are using the National Competency Standards – whether team-based processes are in place – how autonomous operators are expected to be at your mine.

3.5 What computer literacy skills do operators need?

Operators in control rooms and washplants already spend much of their day using computers. Operators monitor operations via Windows-based interfaces. As well as having a conceptual understanding of the processes they are monitoring, these operators need to:

- be comfortable with basic terminology in order to explain a problem
- understand common features of Windows-based packages
- interpret icons
- read visual texts such as complex flow charts
- operate pull down menus
- understand and use multiple on-screen windows
- understand and use the navigation controls of an electronic text
- understand and use the capabilities of an electronic text eg search capabilities, formatting options etc
- monitor trends represented by graphs

(Adapted from Corbel 1997)

Increasingly many operators involved in other mine operations are developing or will need to develop computer literacy skills in order to:

- operate equipment which has Windows-based operator consoles
- retrieve information from a database
- use a computer based training program

COAL PREPARATION PLANT CONTROL ROOM, CUMNOCK NO 1 MINE

3.6 The workplace trainer as language and literacy teacher

The language and literacy demands of training

The language and literacy demands of off-the-job training are usually more complex than the demands placed on operators while on the job. The texts which operators might need to deal with in the training contexts are outlined in Figure 3.

Accessible language

As a workplace trainer, you will be confident in your content knowledge. You are probably used to talking to other content experts about issues and problems in your field. To be an effective trainer you need to be able to use language that will be accessible to your trainees.

When planning your training sessions, take some time to reflect on the language which will be useful to operators. For example, if you need to discuss the characteristics of coal, you need to decide if you will:

- use a technical term – *propensity for frictional ignition.*

OR

- use less technical language – *the likelihood that coal in a particular seam will ignite when struck by a pick*

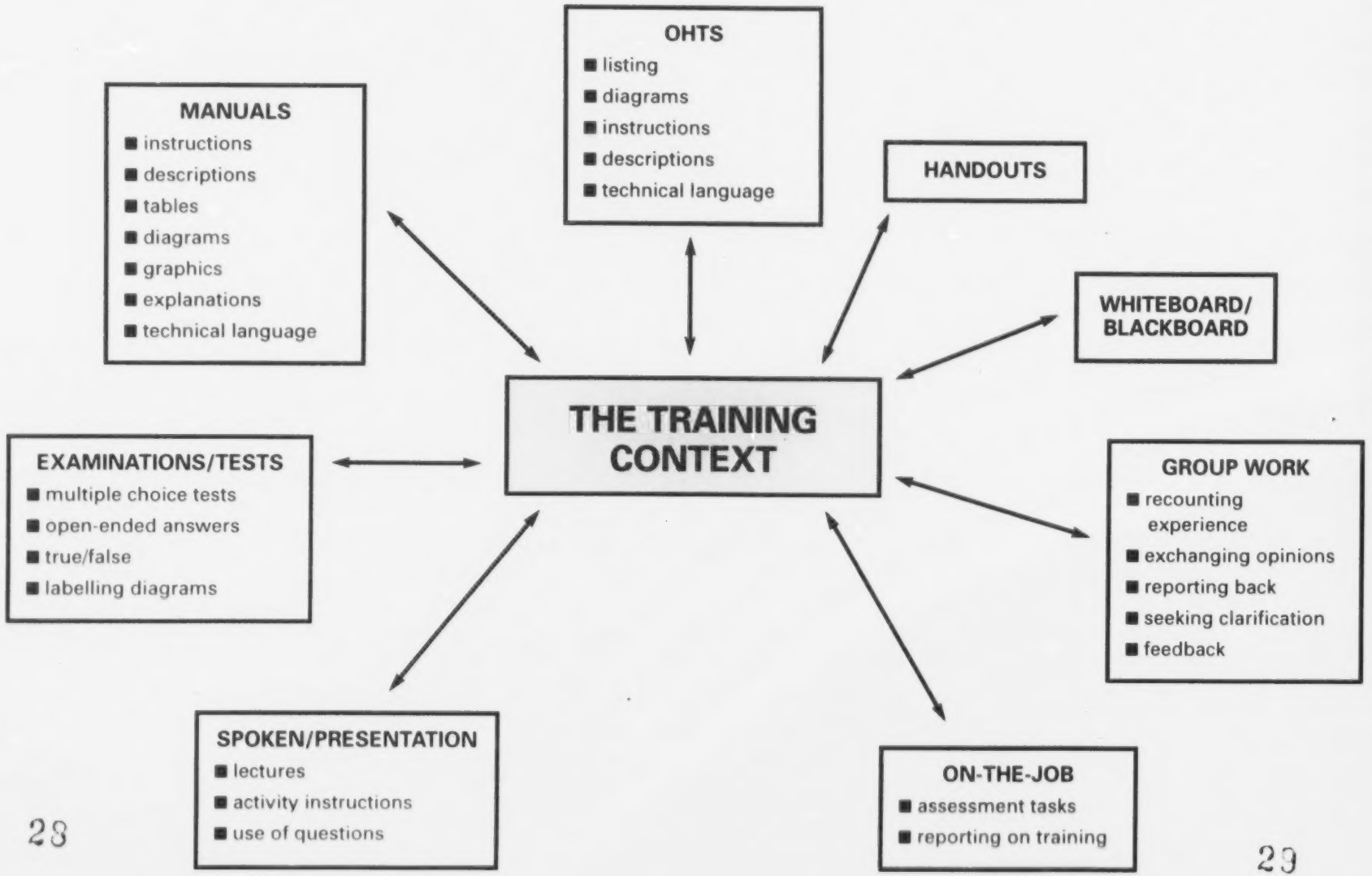


FIGURE 3.1: MODES OF COMMUNICATION IN THE TRAINING CONTEXT (JOYCE ET. AL. 1994)

Training strategies for technical language:

- Make a list of the technical terminology you need to use in the training session.
- Explain new terminology to trainees when it is introduced.
- Let the trainees know that you want them to remember and use the term or concept.
- If you find yourself saying - We call it blah blah blah, but you don't have to worry about that – then you are probably using terminology that is not relevant to operators.
- Refer back to your list of technical terms and revise them with the trainees at the end of the training session.

There are a range of written materials we use to support training. Strategies which we can develop for using them effectively are listed below:

Training strategies for using handouts and OHTs:

- Think about how they will enhance learning.
- Think about the design of OHTs and handouts because poorly designed materials are discouraging for trainees with reading difficulties.
- Do not photocopy slabs of information from textbooks or operator manuals onto OHTs because this is not a useful training strategy.
- Put only six to eight pieces of information on an OHT and print them in 14 point font or larger.

Training strategies for using operator handbooks:

- Before designing the handbook, be clear about the purpose of the handbook. Is the purpose to provide a resource for the training, or do you want the handbook to be used also as a reference resource after the training has been completed? Make sure you tell the reader what the purpose of the handbook is.
- Plan the structure of the handbook.
- Think about the concepts and technical language that operator's need. Don't be more technical than you need to be.
- Make them as reader-friendly as possible (see Part 5 *Writing in plain English*). Information copied from textbooks or manufacturer's specifications is designed for a different audience and so is not appropriate for an operator's handbook.

Teaching a writing task

This section will give you some ideas about teaching operators how to do a simple writing task, such as filling in a form or danger tag.

PREPARATION

- find a blank form or tag and copy it onto an OHT
- find some completed examples which are considered good models
- copy the models onto OHTs and make copies to distribute to trainees
- find some examples of poorly completed tags or forms
- copy the poor examples onto OHTs and make copies to distribute to trainees
- spend some time analysing how the tags or forms are structured
- spend some time analysing what an operator needs to be able to read and write to complete the text successfully.

The text-based approach

The best method to use when teaching trainees to undertake writing tasks is called *the text-based approach to teaching writing.* It has four stages:

STAGE	STEPS
1 Building background knowledge of the text	■ Put a copy of the text on an OHT and ask the trainees the following questions: – What is the purpose of the text? – Where is it found? – What words are likely to be found in the text? – What sort of information is likely to be required for successful completion of the text?
2 Modelling the text	■ Go through the text in detail, indicating features such as: – layout or structure – abbreviations – technical terms – symbols ■ Find the words or phrases that trainees predicted would be in the text ■ Go through the parts of the text that require writing and elicit appropriate information from the trainees ■ Brainstorm the range of things likely to be written if the form requests a general comment from operators ■ Give the trainees a good model and a poor model and ask them to compare the texts and to discuss the differences in groups ■ Ask the trainees to report back on their discussion ■ Find out from trainees if there are any disincentives to completing these texts in the workplace eg: – forms/tags not available – form/tags time consuming to fill in – forms/tags not clearly set out

STAGE	STEPS
3 Joint completion of text	■ Put a blank text onto an OHT and elicit information from trainees or give a blank text and ask trainees to complete the writing task in a group ■ Look for any trainees who are unable to contribute to the group completion of the text
4 Individual completion of text	■ Ask trainees to complete the literacy task by themselves ■ Give some trainees an opportunity to do the task away from other trainees if you think they may have difficulties ■ Give trainees several opportunities to practise filling in the text before they are formally assessed.

In helping trainees to write you are not expected to do what a literacy teacher can do. However when you are designing your training course, you may need to consider these questions:

- Do I need assistance from a trained literacy teacher or consultant to assist me with integrating literacy training into the training content?
- Do some of the trainees have significant difficulties with literacy which will require assistance from a specialist literacy teacher?

4 WRITING IN PLAIN ENGLISH

Most of the blokes can read.
What they have trouble with is
comprehending what they read.

(Training Coordinator – underground mine)

Many operators have effective literacy skills for their day to day lives, but may have difficulty with texts which they are expected to read at work. Some texts are difficult because they deal with legal and technical information eg the Mine Manager's Rules. Often texts are made more difficult than they need to be because the writer did not have a clear sense of the audience they were writing for.

Writing in plain English means writing documents which are:

- clear
- accessible
- coherent
- structured clearly for the audience

To explore the idea of plain English let's look at two texts. As you read them think about these questions:

- Where are the texts from?
- Who are the texts written for?
- Would the audience find them easy to read?
- Which text is easier to read?

Make notes on the two texts:

RULES FOR THE REMOVAL OF ELECTRICAL POWER FROM A MINE OR PART THEREOF

(c) EMERGENCIES OR CONDITIONS OF DANGER

In the event of emergencies or conditions of danger in the mine or part thereof, the procedure for isolation of power shall be:

(i) If the emergency or condition of danger exists in the whole of the mine, the person appointed to isolate power at the surface shall isolate power under instruction from the deputy or senior official for the time being in charge of the mine and record the event in a book kept for the purpose. The senior official will then issue instructions to be followed by all employees.

(ii) If the emergency or condition of danger exists in part of the mine only, the person discovering the emergency or condition of danger shall cut off the power, contact an official or person capable of cutting off the power to ensure the power is cut off. The deputy or senior official will then decide the course of action to be taken.

The above rules shall not preclude any person in the mine or part thereof from isolating the power in the event of an emergency.

In all such cases where the person isolates the power, that person shall immediately contact the deputy or senior official of the mine or part thereof and explain the reasons for isolating the power.

The official shall record such actions in a book to be kept at the mine to ensure an official investigation can be carried out. Such reports shall be countersigned by the person who isolated the power.

RULES FOR CUTTING OFF ELECTRICAL POWER TO THE MINE OR PART OF THE MINE

If an emergency or danger is affecting the whole mine or part of the mine then power must be cut off.

3 Emergency or danger affecting the whole of the mine

If you discover the emergency or danger, then you must:

- cut off the power
- report immediately to a mine official
- explain to the official why you have cut off the power

The official must then:

- record what happened in a log book
- prepare a report which can be used in any official investigation
- ask you to sign the report

4 Emergency or danger affecting part of the mine

If you discover the emergency or danger, then you must:

- cut off the power
- contact an official or competent person who will check that the power is cut off
- explain to a mine official why you have cut off the power

The official must then:

- record what happened in a log book
- prepare a report which can be used in any official investigation
- ask you to sign the report
- decide what to do next

If the deputy or a senior official is present when the danger is discovered, then the senior official :

- will instruct a competent person to cut off power at the surface
- must record the action in the appropriate logbook
- will give instructions to all employees

Text 1 is an extract from the Mine Manager's Rules from an underground coal mine. The text deals with the rules for removing electrical power from a mine or part of a mine in the event of an emergency.This extract was given to a group of operators at a particular underground mine. They were asked to read it and explain who was responsible for cutting off the power in the event of an emergency.

A number of the operators found the text very difficult to understand, and said that the power could only be cut off by a mine official. But an operator may in fact be responsible for isolating the power to the mine, under certain conditions. It is obviously important that all operators understand their responsibilities under the Coal Mines Regulation Act but this text made it difficult for some operators.

Text 2 is a plain English version of Text 1and was written to make the necessary information more accessible to operators.

Writing in plain English involves more than using simple words. It involves the following steps:

- defining your audience and the purpose of the document
- making sure you have a clear, coherent structure which means that you should be able to point out to someone else how you have structured your text
- making the grammar of the text simpler
- choosing appropriate vocabulary.

These steps will be discussed in more detail below.

4.1 Purpose

Having a clear sense of the purpose of a text is the first step in creating a plain English document. When writing a document think about your purpose in writing. Is your purpose to:

- inform
- describe
- explain
- instruct
- persuade

The purpose of the Rules for cutting off electrical power to the mine or part of the mine is to give clear instructions about what to do in an emergency or when danger is present. The instructions need to be as explicit as possible. For example we can compare how clearly the instructions are given in Text 1 and Text 2 above:

TEXT 1: ■ *the person discovering the emergency or condition of danger shall cut off the power ...*

TEXT 2: ■ *If you discover the emergency or danger, then you must:*
– cut off the power ...

The *Rules for cutting off electrical power to the mine or part of the mine* are attempting to make it clear what people's legal obligations are under certain conditions are. It is saying – *if x happens, then you* ***must*** *do the following things.* It is important to make the degree of obligation as clear as possible. Instead of saying shall or should, it is much clearer to say *must.*

4.2 Audience

You need to keep your audience in mind at every stage of developing a document. Before you start writing, ask yourself – Who is the audience for this document? For example we can compare the audience for Text 1 and Text 2 above:

TEXT 1: ■ *the language of text 1 is appropriate for an audience who has legal training*

TEXT 2: ■ *the audience of text 2 is clearly operators who also need to understand their responsibilities in an emergency situation*

4.3 Text structure

When preparing a document take time to plan the structure of your text. Think about how to make the structure of the text clear to the reader. For example we can compare the structure of Text 1 and Text 2 above:

TEXT 1: **Sentence 1:**

- introduces the procedure for the isolation of power but in fact there are two separate points introduced:
  - the first describes what to do if the emergency or condition of danger exists in the whole mine
  - the second describes what to do if the emergency or condition of danger exists only in part of the mine
- is misleading because it suggests that the two points to follow are part of a single procedure

Paragraph 4:

- is a very confusing but important legal point:
  - it tells us that if the operator discovers the emergency or condition of danger, then they must cut off the power to the whole mine
  - this seems to contradict point (i) which says that the power should be cut off by an appointed person

TEXT 2: Text two has a clear and simple structure which is made explicit to the reader by:

- the use of headings
- separating the sections into:
  - Section 3 which describes what must be done in the event of an emergency or danger affecting the whole mine.
  - Section 4 which describes the procedure for cutting off power to part of the mine only
  - a separate section which describes the different procedure if an official is present

4.4 Grammar

Ordering ideas in a paragraph

Paragraphs help us to give a structure to a text. When writing paragraphs remember:

- paragraphs provide the reader with a manageable chunk of information
- all the information in a paragraph should be related to one key idea
- the first sentence in a paragraph signals to the reader what the paragraph is about
- the other sentences in the paragraph should all relate back to the key idea expressed in the first sentence

In this sample paragraph the key idea in the first sentence is underlined:

> *Changing standard procedures so we do things better is called the 'improvement cycle'. In the improvement cycle we gather information about what we are doing. We then use this information to plan improvements. We test the plan to see how it works. If the results are good then we adopt this as a way of doing things. We continue to look for improvements and repeat the cycle.*

Ordering ideas in a sentence

We often need to express more than one idea in a sentence and writing plain English does not restrict you to short sentences. If you need to express more than one idea in a sentence, then try to find a logical order for the ideas. Consider how the ideas are expressed in this sentence:

Sentence 1: *Persons operating mobile diesel equipment should immediately they are aware of a fan stoppage shutdown the diesel equipment.*

Now look at this sentence:

Sentence 2: *If you are operating mobile diesel equipment you must shutdown your equipment as soon as you realise the fan has stopped.*

The second sentence is much easier to read than the first one. Let's look at the differences between the sentences:

SENTENCE 1	SENTENCE 2
There are two ideas: i *Persons operating mobile diesel equipment should....shutdown the diesel equipment* ii *immediately they are aware of a fan stoppage* The problem is that the first idea is interrupted in the sentence by the second idea.	The ideas are kept separate: i *If you are operating mobile diesel equipment you must shutdown your equipment* ii *as soon as you realise the fan has stopped* This makes the relationship between the two ideas clearer for the reader.
The more formal and old fashioned word *persons* is used.	The more personal and direct word *you* is used.
The formal and unusual noun *stoppage* is used.	The more usual verb *has stopped* is used.

Changing nouns to verbs

In written language we are much more likely to use nouns. Nouns are words which name things, people and places. When we speak we tend to use verbs. Verbs are the words which tell us what we do, think, feel, are, have etc.

Compare the following sentences:

Sentence 1: *In the event of a vehicle breakdown, the operator is responsible for:*

(i) where possible removal of vehicle from the travelling road.

Sentence 2: *If a vehicle breaks down, the operator must:*

(i) remove the vehicle from the travelling road, if possible.

We can compare how the words have been changed from Sentence 1 to Sentence 2 which is the plain English version:

noun – *breakdown*	>	verb – *breaks down*
noun – *removal*	>	verb – *remove*
in the event of	>	*if*

4.5 Thinking about words and phrases

When you are preparing training materials you need to think about the words and phrases you use. Some strategies you can use are outlined below:

■ Use a simpler word, if possible	
■ Use technical words which are commonly used in the workplace	If technical words are used a lot in the workplace, then you will need to keep that in your text. This gives trainees the necessary technical language to operate effectively at work. For example: ■ if you are writing a procedure dealing with *isolation of high tension equipment*, you will need to use and explain the term *high tension*
■ Replace technical words which are not commonly used	If technical words are not used a lot in the workplace, then they are not necessary eg: ■ an evacuation procedure might include the following instruction – *Proceed to the Deputies station and await instructions* – ■ the words *proceed* and *await* can easily be replaced by more commonly used words, for example: *Go to the deputies station and wait for instructions*
■ Do not use archaic and legal words that are not commonly used.	■ Some words are very rarely used and their only function is to make the writer sound important eg: – *therein* – *thereof* – *in pursuance of*

4.6 Summary

Using plain English for all workplace documents will make communication much more effective. People are much more likely to read documents which are easy to read. Information should not be made difficult for people to understand. In many cases it is easier and quicker to write plain English versions of documents than to waste time explaining them or to provide literacy support so that everyone can read them. For example plain English versions of the Mine Manager's Rules would eliminate the legalistic language and make it easier for everyone in the mine to understand them.

When writing a plain English document, think about:

- who the intended audience is
- what exactly the audience needs to know
- how much technical information the audience needs

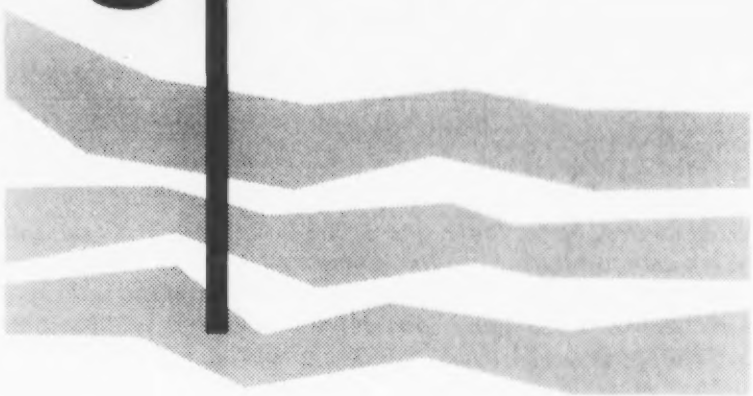
When preparing a plain English document, make sure you:

- begin your document with a clear statement on what the reader is going to learn and what the purpose of the text is, for example:

  These rules tell you what to do in an emergency

- give your text a clear structure.
- use headings to signal the parts of the text
- collect samples of similar texts which you feel are accessible and clearly written
- ask some of your target audience to read your text and to give you feedback on how clear it is

5 TRAINING TIPS



5.1 Characteristics of effective trainers

If you have taken the trouble to become a workplace trainer, it is probably because you are enthusiastic about helping other people to learn. An effective trainer is someone who:

- has a good understanding of content
- has experience on the job
- is a good communicator and has good rapport with people
- can write clear, structured training materials
- has been exposed to a range of teaching and learning practices
- is appropriately qualified
- keeps up to date with both content and training methods
- gives continual feedback and support to trainees
- is able to cater for individual differences among trainees

(From Joyce et al 1995: 13)

5.2 Structure of a training session

An effective training session has three stages:

- introduction
- development
- consolidation

(Joyce et al 1995: 48-50)

The elements of these three stages are outlined below:

The introductory stage

The role of the trainer in the introductory stage is to:

- provide trainees with an overview of what will be covered in the training session
- explain the relevance of the training
- make trainees feel comfortable by encouraging them to participate in the training and to ask questions at any time
- clarify how and when the training will be assessed

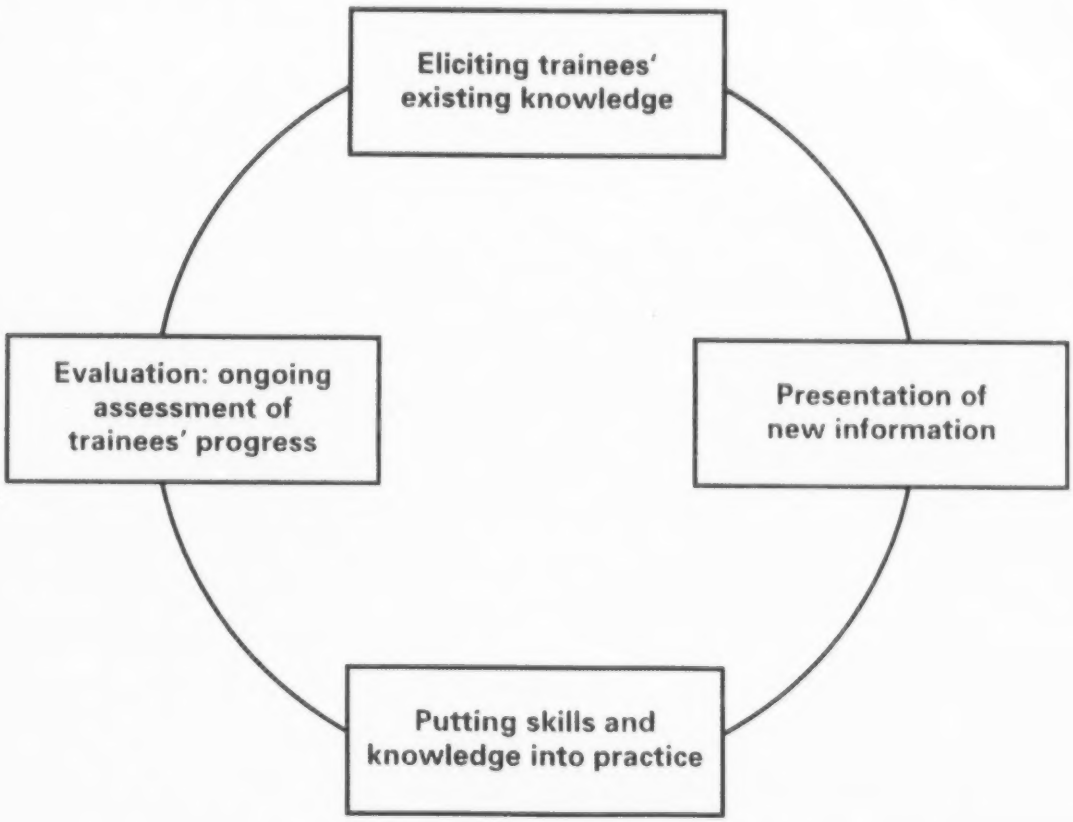
An example of Stage 1:

In the following extract from a training session on mine gases and mine gas detection, the trainer:

- gave trainees an overview of the content of the training session
- encouraged the trainees to ask questions
- spelt out very explicitly what was expected of the trainees in the assessment process

we'll have a look at what normal air is, that's one of the first things we'll do, because once we've done that we can compare everything else to it and what we expect in our coal mine, then we'll have a look at the gases that come out of the coal seam and the strata above and below it, we'll also look at exhaust gases, and the gases in your goaf and ah what happens when coal oxidises or burns, you know, like a spon com sort of situation, so we'll have a look at all those, and as we go along for Christ sakes ask questions, you know, I don't know what's gunna win any races this afternoon at the horses but I know other stuff and if I don't know I'll find out for you, OK? Now, at the end of the session, I'm going to ask you individually the answers to these questions, so let's have a look at them now. (trainer hands out a copy of assessment task and goes through each of the questions)

FIGURE 4: PHASES IN THE DEVELOPMENT STAGE (ADAPTED FROM JOYCE ET. AL. 1995)


Eliciting trainees' existing knowledge
Presentation of new information
Putting skills and knowledge into practice
Evaluation: ongoing assessment of trainees' progress

The development stage

Figure 4 shows the four phases in the development stage.

(i) ELICITING EXISTING KNOWLEDGE

In this phase, the trainer tries to find out how much the trainees already know. This is important because it:

- gives the trainer more information about trainees' existing knowledge of the subject
- establishes a rapport between the trainer and the trainees

(ii) PRESENTATION OF NEW INFORMATION

In this phase, subject matter knowledge is expanded through:

- analysis
- discussion
- interpretation of the new information being presented

While it might be more comfortable for the trainer to lecture to trainees, it is not the most effective way of presenting new information, particularly when trainees have not been involved in formal training for some time.

It is important for the trainer to have a range of ways of presenting and explaining a new concept or idea. This ensures that trainees stay interested and involved in the subject matter and that they can see the relevance of the training to their work.

Some examples of strategies which trainers might use when presenting new information are presented in the table below with examples from training sessions:

Pose a problem	– *OK, if a deputy gets a reading of 15ppm of CO in this roadway, with 10 cubic metres per second going through it, and he gets 10ppm of CO in another roadway, with 30 cubic metres per second going that one, where's he got his biggest problem?*
Engage trainees in jointly constructing a problem	– *OK, let's just take this back a few steps. Why's the deputy measuring the CO?* – *so we're not breathing in too much CO.* – *Yeah that's one reason. What's another one? Where does CO come from?* – *Diesel exhaust* – *Yep* – *Coal heating up* – *Yeah that's right, remember we talked about coal heating up or oxidising, remember that term, oxidising, it means the coal is heating up, it's using oxygen, and it's producing carbon monoxide. So there's two things we're looking at with CO, one is, well basically it's not that good for you is it, so we want to make sure you've got a well ventilated working environment, and also we keep an eye on the levels of CO cos if there's a lot of it, and it's increasing well maybe we've got a heating, if we've got a heating we're starting to worry about a spon com sort of situation.*

Explain new terminology	– *remember we talked about coal heating up or oxidising, remember that term, oxidising, it means the coal is heating up, it's using oxygen, and it's producing carbon monoxide.*
Use simple analogies to explain concepts	– *Right, OK and we're going to change this into cubic metres, does anyone know another way we can measure how much of a gas we've got? We're talking about volume here, how much space something occupies, if I'm filling up a tank of petrol, how do I measure how much is in there?* – *litres?* – *OK so we can measure gas in litres too, and if we've got 1 cubic metre, let's draw that, actually lets measure that out so we've got a picture in our heads (trainees get out a tape measure and measure out 1 cubic metre) Anyone know how much gas would fit in there?* – *1000 litres?* – *Yep, that's right*
Explain mathematical or symbolic notation. **The detail of your explanation will depend on the trainees' existing familiarity with the mathematical or symbolic notation.**	– *OK so I can say 15 parts per million, or I can write it like this (writes 15/1 000 000 on white board)– OK so I've written that as a fraction, let's have a look at it, let's have a look at simpler one, if I buy a pizza, and I cut it into two pieces, (draws this on board) and I give you one piece, I've given you a half, which I can write like this (writes 1/2), OK the bottom number tells me that I've taken a particular quantity and I've divided it into equal size parts, with the pizza it was divided into two parts and I gave you one of the two parts, which we write as one over two. Now suppose I had a really big pizza, and I cut it up into a million pieces, and I gave you 15 pieces, I can write that the same way, as 15 over a million. Let's go back to our roadway, where we've got 15 parts per million of CO. Can someone explain what that means?* – *you've divided up the air into a million bits, and 15 bits are CO.*
Check understanding by asking open questions	– *Can someone explain how we calculate CO Make?*

LOADING COAL

(iii) PUTTING SKILLS AND KNOWLEDGE INTO PRACTICE

In this phase, trainees practise applying newly learnt knowledge and skills in relevant contexts and activities. This will involve:

- using new knowledge to solve problems
- applying new skills to work contexts
- giving trainees opportunities to explain how they are applying their skills and knowledge
- giving trainees opportunities to work both in groups and individually

(iv) EVALUATION

Evaluation needs to be ongoing through a training session. Trainers need to be constantly checking trainee understanding.

Asking questions such as *Do you understand?* or *Are you following me?* is not an effective way to assess whether trainees have in fact understood. Questions which assess understanding need to be open questions ie questions where the answer is not simply yes or no. Questions for checking understanding include:

Reproductive questions

- these are questions which require trainees to remember and reproduce knowledge eg:
  - *What's the explosive range for methane?*

Analytical questions

- these are questions which require trainees to think critically and ask why and how eg:
  - *Why are control valves used in pneumatic systems?*

Speculative questions

- these are questions which require trainees to explore new possibilities and ask *what if* eg:
  - *You might have an area like so* (trainer draws on board) *and this has been sealed off like so, and the outside pressure, this is your workings here, the outside pressure drops, the pressure in your workings drops, what's going to happen?*

The consolidation stage

The role of the trainer in the consolidation stage is to:

- consolidate what trainees have learned
- assess trainees knowledge and/or level of skill
- provide opportunities for trainees to apply what they have learned
- give trainees the opportunity to check their understanding of the concepts, ideas and skills covered in the training

In this final stage of the training session make sure that you summarise what has been covered so far. One way to do this is to ask the trainees to tell you what has been covered. This helps you put a summary together as well as giving you another opportunity to check trainee understanding of the content.

You will have already engaged trainees in applying the concepts and skills they have been developing. However at this stage you need to see if trainees can apply their skills and knowledge independently. This will allow you to judge whether trainees are ready to be assessed formally.

6 DESIGNING INTEGRATED TRAINING

6.1 What is integrated training?

Integrated training refers to training programs where the language, literacy and numeracy demands of the job have been recognised and incorporated into training delivery and assessment.

Integrated training programs have the following features:

- they identify the language, literacy and numeracy demands of the job
- they incorporate the language, literacy and numeracy required for the job into training design and delivery
- they assess language, literacy and numeracy outcomes in terms of successful performance of relevant and authentic vocational tasks

Training falls into two distinct types:

(i) training that is directly linked to skill development eg learning to operate a piece of machinery

(ii) training that is knowledge based eg principles of electrical theory, understanding spontaneous combustion etc

6.2 Identifying language, literacy and numeracy competence

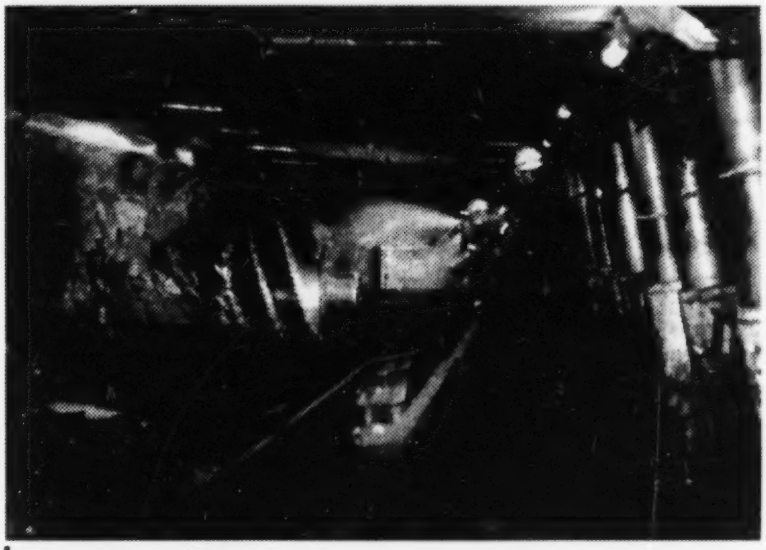
Skills-based training

Identifying the language, literacy and numeracy demands for skills based training means:

- observing the operator using the skills being developed
- making notes of the related language, literacy and numeracy tasks
- integrating these tasks into the training delivery and assessment

The following questions will help you to identify the language, literacy and numeracy competence related to the skills being developed:

- What do operators need to read and write?
- What spoken communication is involved?
- Do the written texts include any numeracy?
- Is there any numeracy involved in the application of these skills?
- What do the relevant competency standards say about language, literacy and numeracy?



LONGWALL MINING AT SOUTH BULLI COLLIERY

An example of the language, literacy and numeracy demands in an integrated training program developed for bulldozing on stockpiles are outlined in this table:

SPOKEN LANGUAGE	WRITTEN LANGUAGE	NUMERACY
Trainees need to be able to: ■ liaise with shift supervisor regarding current status of stockpiles/feeders ■ maintain 2-way communication with control room and other washplant operators as necessary	Trainees need to be able to: ■ read and fill out relevant details in stockpile access log book ■ read and fill out relevant details in dozer report book ■ read stockpile/feeder indicators on computer screen for % of coal over feeders ■ complete 103 statutory inspection form ■ read relevant safe working procedures ■ read relevant sections of Mine Managers Rules	Trainees need to be able to: ■ write dates ■ estimate duration of work performed ■ read diagrams of stockpiles/feeders etc ■ understand percentages ■ estimate distances

(Adapted from module on Bulldozing on Stockpiles developed by Greg Grant – Training Co-ordinator at Bulga Coal)

Knowledge based training:

Identifying the language, literacy and numeracy demands for knowledge based training involves asking the following questions:

- What concepts or principles are being developed?
- What new terminology is involved?
- Is maths used in the description of how these principles are applied?
- What tasks in the workplace will be enhanced by this knowledge?
- Is there any reading and writing associated with these tasks?
- Is there any numeracy associated with applying this knowledge?
- What do the relevant competency standards say about language, literacy and numeracy?

An example of some of the language, literacy and numeracy demands in an integrated training program for developing knowledge of spontaneous combustion are outlined in this table:

SPOKEN LANGUAGE	WRITTEN LANGUAGE	NUMERACY
Trainees need to be able to: ■ participate in training activities eg group problem solving tasks ■ demonstrate understanding of key concepts by providing spoken explanation	Trainees need to be able to: ■ read training materials which support the learning of content eg operator training manual ■ read relevant safe working procedures eg procedures for erecting seals, stoppings, holing procedures etc ■ read relevant sections of Spon Com Management Plan (eg action plans) ■ read relevant sections of Mine Managers Rules	Trainees need to be able to: ■ read mine plans & ventilation diagrams – scale, keys and symbols ■ read flowchart indicating levels of response to indicators of spon com eg action plan ■ understand measurement of volume, capacity cubic metres, litres, and conversion between them ■ understand effects of barometric variations to risk of spon com eg measuring atmospheric pressure and airflow ■ understand relationship between gas readings and relevant ratios eg between concentration of CO and CO Make

6.3 Recognising language, literacy and numeracy in competency standards

The National Coal Competency standards provide guidance about the language, literacy and numeracy related to a particular area of competence. Language, literacy and numeracy are integrated throughout the standards. This means you need to look at the whole competency description to determine the required language, literacy and numeracy skills.

The coal competency standards are designed so that they can be tailored to local conditions. This means the particular range of language, literacy and numeracy skills required for competence will vary from site to site.

When applying the competency standards to your operation, the key issue in terms of literacy is to determine whether:

- operators need the literacy skills to access independently the various written texts that impact on their work eg maps, manager's rules, safe working procedures, manufacturer's instructions, emergency procedures

  OR

- operators can access this information via spoken language eg through crew talks, tool box talks, informal discussions with workmates etc

Key words in the competency standards will help you recognise the language, literacy or numeracy. You will find references to language, literacy and numeracy in various places in the competency standards. These words are set out in this table:

LANGUAGE	LITERACY	NUMERACY
■ reporting, reported ■ communication ■ informing ■ instructions ■ explains ■ requests ■ consultation ■ co-operation ■ identifies ■ interprets ■ briefings ■ handover details ■ details are interpreted and clarified ■ two-way communication	■ procedures ■ rules ■ regulations ■ legislative requirements ■ manuals ■ manufacturers specs ■ policy ■ records, recording ■ statutory requirements ■ maps ■ plans ■ diagrams, ■ geological and survey data ■ work orders ■ safe working or job procedures ■ tagging procedures ■ safety information ■ visual display units ■ complies/in accordance with site procedures	■ specifications ■ plans ■ maps **Note**: ■ Individual samples of texts will need to be analysed for their numeracy content. ■ The section on underpinning knowledge needs careful attention here.

(Adapted from Lander 1996 Module 3)

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The key words which indicate language, literacy and numeracy in Core competency one – *Work Safely* – are highlighted in bold in the following tables. The skills areas are noted in brackets.

ELEMENTS		PERFORMANCE CRITERIA	
1.1 (*reading*)	Access and understand the site **procedures**	1.1.1 (*reading*)	**Site safety rules** are accessed, understood and applied to the particular work situation
		1.1.2 (*writing*) (*reading*)	Isolation of energy sources and immobilisation of potential energy sources is carried out, including **tagging**, in accordance with authorised and/or enterprise **procedures**

RANGE OF VARIABLES	
1 (*reading*) (*numeracy*)	Safety information and procedures may be contained in **legislation** and **regulations**, relevant Australian **standards**, management **plans**, **manager's rules**, OH&S **policy**, **codes** of practice, **manufacturer's instructions, safe working or job procedures**

EVIDENCE GUIDE

3 Critical aspects of evidence

(*language*) (*reading*)	a	accessing and **interpreting** mine safety **procedures**
(*reading*) (*numeracy*)	b	accessing and **interpreting** the chemical safety substance information **system**
(*writing*) (*reading*)	g	applying **tagging**/lock out **procedures**

5 Underpinning knowledge

(*reading*) (*numeracy*)	■ site and equipment **safety systems/rules/procedures**
(*numeracy*) (*reading*)	■ current mine layout and **plan**
(*numeracy*) (*reading*) (*writing*)	■ permit and clearance **procedures**

(Adapted from Lander 1996 Module 3)

Once the language, literacy and numeracy demands of the training module have been identified, these can then be incorporated into the learning outcomes. They can then be systematically addressed in the delivery and assessment of the training module.

6.4 Incorporating language, literacy and numeracy into training delivery

A training specification or package will need to indicate to the trainer where and how to address the relevant language, literacy and numeracy demands. This can be done by:

- addressing language, literacy and numeracy explicitly in the learning outcomes
- including samples of related language and literacy tasks in the training package
- specifying the numeracy content to be covered
- making sure numeracy is addressed in the context to which it is applied
- providing opportunities for trainees to practise language and literacy tasks
- ensuring that trainers are equipped with a range of training methodologies to meet the demands of trainees with varying degrees of language, literacy and numeracy

6.5 Integrating language, literacy and numeracy into assessment

Trainers involved in designing assessment tools need to make sure that assessment tasks accurately reflect the language, literacy and numeracy demands of the skills or knowledge being developed in the training. When designing assessment tools it is important to:

- make sure that trainees understand the assessment criteria when the training begins
- provide trainees with the opportunity to be assessed orally where appropriate
- ensure that trainees are assessed on the literacy tasks demanded of the job eg asking trainees what to do if a machine or vehicle is defective does not assess whether they can actually fill in a danger tag or out of service tag
- provide opportunities for trainees to practise the assessment tasks during the training course

7 PROVIDING WORKPLACE COMMUNICATION SKILLS TRAINING

Many industries have recognised the need to improve communication in the workplace and have provided workplace communication skills training for operators and other personnel. Industries have provided workplace communication skills training in various ways such as:

- providing one off training programs
- appointing an enterprise based teacher (EBT)
- providing on-line courses
- setting up self access study centres

7.1 Case study: a workplace communication skills program

The best thing the company's ever done.

(Project Manager: Engineering Training – Powercoal)

The following case study shows the diversity of services that an enterprise based teacher can offer a company. It was collected from Powercoal, a company which operates seven mines in the Lake Macquarie Area on the NSW Central Coast and an eighth mine near Lithgow.

In 1995, Powercoal decided that it was time to provide workplace communication skills training for their employees. A ten week pilot program was initiated at the end of 1995 and nine volunteers came forward to participate in the program. The pilot was so successful that Powercoal decided to seek funding from the Workplace English Language and Literacy (WELL) program to fund a full-time workplace communication skills teacher and Julianne McLeod from NSW AMES Workplace Communication Services was appointed.

Julianne is based at Powercoal's Mining Services and provides language, literacy and numeracy skills training to the seven central coast mines. She has been able to provide a range of services to Powercoal employees including operators, deputies, tradespeople and leading hands. These services include:

- literacy programs to enable employees to read:
  - remote control panels for continuous miners and roof bolting equipment
  - danger tags
  - 103 statutory inspection forms
  - training manuals
  - skills audits
  - maintenance manuals
- literacy programs to enable employees to fill in danger tags and 103 statutory inspection forms
- communication skills training to enable tradespeople to complete fitter and electrician reports for leading hands and engineers
- communication skills training to enable leading hands to complete reports for engineers
- numeracy training to enable employees to:
  - do calculations
  - use calculators
  - use metric measures
  - read pressure gauges
  - calculate volumes, ratios etc
- team leader communication skills programs
- study skills training for people undertaking TAFE courses
- spoken communication and presentation skills training for people involved in delivering workplace training
- workshops in writing plain English documents
- the writing of a literacy resource called *Caution: Words at Work*

Julianne has also edited two volume of stories and poetry by operators from various Powercoal mines:

- *Pit Yarns and Poetry*
- *Pit Yarns and Poetry – Volume 2*

The appointment of an EBT has many advantages for a workplace because:

- the teacher is actually on-site and becomes familiar with the particular operation
- the teacher gets to know and develops a rapport with the trainees. This is important for encouraging trainees and sustaining their motivation.
- the teacher learns how to access the workplace texts required by operators at that site
- the teacher is contracted for longer periods (up to a year at a time) and this allows some of the more reluctant operators to see other employees attending and benefiting from communication skills programs which helps to reduce some of the fear and embarrassment of stepping forward to participate

7.2 Case study: a trainee

Peter Gillis is an operator from Powercoal's Munmorah Colliery. He has been attending Powercoal's workplace communication skills program for nearly two years. Sections of his story are transcribed below from an edited interview with Peter in November 1997. It is not an uncommon story in the mining industry. In the interview Peter articulates the benefits of a communication skills program for himself and for Powercoal. His story emphasises the need for all mines to be aware of the changing language, literacy and numeracy demands being placed on operators.

PETER GILLIS, MINER DRIVER, MUNMORAH COLLIERY, WITH NSW AMES WORKPLACE COMMUNICATION SKILLS TEACHER, JULIANNE MCLEOD

Well I left school at the age of 14 and 9 months and went straight into the workforce and really never had time I don't suppose to be able to read and write properly.

My wife's father was a coal miner, and looking after my wife's interests he said *I think I should get you a job in the coalmining industry* and I did and I've been there ever since, my daughter is 24, at the time she was about 6 months old.

Well, there was a notice distributed out to the colliery about reading and writing classes, I didn't understand what it said anyhow. Then a bloke by the name of Bruce Woods come to me and he was aware of my problems as far as reading and writing went and he suggested that I went and seen Julianne and see if she had a class there that could help me as far as reading and writing went.

So then I had an appointment to see Julianne [workplace communication skills teacher from NSW AMES, based at Powercoal's Mining Services] over at Endeavour Colliery and I walked into the room there, there were half a dozen blokes in the room, and I asked Julianne whether we could have this interview on our own, sort of thing. I was embarrassed about it. We went into another room and Julianne handed me a form to fill out and I said to Julianne I couldn't read what was on it, and Julianne said *no problems*, that she would fill it out. So she filled out the form and then the following Wednesday I attended the first class.

I spoke to my wife about it and she said *I believe you should go and do it* and my kids said *Yeah you should try and get some reading and spelling*. When my kids were at school, you know they'd come home and ask me for help with their homework and I'd have to say *Go and ask your mother* because I couldn't help them.

For myself personally I knew that I had to go and do something about it with the changing of the mining equipment. I'm a miner operator and you see the new miners, they're changing them over to remote control. I like operating the miner, and I never had a clue about what these remote switches and levers do, what they did operate and what they didn't operate. I wasn't prepared to just pick up the remote and have a go because to me to injure someone underground, through my negligence, my negligence, it's not my go.

Well the training's helped me at work in quite a few different ways. When I operate a switch I know what it's going to do and I know quite well that I can operate that and move some part of the machine without injuring either myself or anyone else.

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Also it's helped me as far as filling out 103 inspections, 103 inspections on GEMCOS which I drive from pit bottom to the end of the rails and you do have a responsibility. You've got something like fourteen men in the vehicle and to do your inspections is important.

If you find a defect on them, rather than just operating the machine with the defect you put on a tag saying *flat tyre* or *blown hydraulic hose* or some sort of defect, then someone else can't come up and hop on the machine and start driving it and possibly get injured.

Before I came to Julianne's class I couldn't fill in a tag, I didn't even have a clue what was on the tag. We've never needed to do it until about three or four year ago. Before it was always done by a tradesperson.

The course has given me a lot more confidence in myself being able to achieve these things at work. If something's put in front of you and you haven't got a clue about how to go about filling it out, it is embarrassing for the person and you don't want your workmates to think that you're a total bloody idiot or something like that. So you try and bluff your way around it. Well that's what I've done for a period of time. I've been attending this class for almost 2 years now and I'm not embarrassed now that I'm not 100% being able to read properly but I can do a normal day's work without a problem.

Signs underground, there's all different signs been put up, and you think well *what the hell are they, they've never been there before.* Now I can read the signs, danger signs and things like that. There are different signs there and I can figure out most of it.

Before I'd get mail sent to me and addressed to me and my wife would read most of the mail and she'd pay most of the bills, do the banking and that type of thing for the simple reason I never had a clue how to do it anyhow, so I relied a lot on her for that particular task. Now I can read most the letters that come and pay my own accounts and such. Banking I'm still not really sure of.

The response from my workmates has been quite good. For a long time I have hid the problem from my workmates. I used to stop and buy the newspaper everyday on the way to work, I couldn't read anything in it, just so the blokes wouldn't know I couldn't read. Now they do understand the problem and I can be open with them now and if I have got a problem with something I can ask the bloke alongside of me to give me a hand with that. He hasn't got a problem with that and he doesn't make jokes of it, he doesn't make fun of you and doesn't put you down. So to me that's a plus.

I feel a hell of a lot more confident in my work. Most of the machinery I drive today is remote and that's only been since I've been going to this class that I've been able to understand it.

I'd suggest to other blokes in the workforce, if you do have the same problems as I've had I'd strongly recommend you do take up a class like this because for me, it's helped me 100%. The biggest thing is it's given me confidence in myself, if you don't have that, well, what have you got?

Powercoal has given me the opportunity to be able to achieve what I have achieved, along with Julianne's class. I think Powercoal has benefited from me doing this program because now I can to do my job underground safely.

What we're achieving now as far as I'm concerned is being able to pick up a newspaper and being able to read it correctly to find out what's going on in the world. You know, you sit in the crib room there and blokes are reading the papers and one of the blokes'll say *such and such overseas somewhere got hurt* or something along those lines and you think well *what the hell is he talking about* and unless he reads the whole story you wouldn't have a clue what he's talking about and that's what we're working on now.

7.3 Setting up a workplace communication skills program

Identifying operators with language, literacy and numeracy difficulties

Identifying operators who may benefit from a workplace communication skills program is not always easy. Many operators with language, literacy and numeracy difficulties will work hard at disguising their difficulties. These operators may:

- take forms home for someone else to complete
- ask for help to read a document because they *have left their glasses at home*
- be unwilling to undertake training
- display a lack of interest or be disruptive in a training session
- be unwilling to contribute ideas if these require writing
- have difficulty understanding spoken language where this involves more complex language such as a technical explanations
- be reluctant to undertake new tasks
- be unable to undertake a written assessment task

Talking informally to supervisors and co-workers may be useful in identifying operators with language, literacy and numeracy difficulties.

Publicising a workplace communication skills program

To publicise a program you will need to do more than place a notice on a notice board. This will only inform operators who already have some literacy skills. You will need to:

- provide information in various modes eg:
  - notes in a play slip
  - addressing crew talks and union meetings
  - encouraging word-of-mouth advice and recommendations
- provide opportunities for trainees to make confidential enquiries about the program
- enlist the support of supervisors who may be able to speak informally to operators who they know would benefit from workplace communication skills training
- develop general support for employees who undertake workplace communication skills training by helping all employees to see the benefits of the program to the company

Seeking funding

The Workplace English Language and Literacy program provides funding to establish programs for workers who need language, literacy and numeracy assistance. It aims to assist those employees who need language and literacy training in order to:

- meet the demands of their current employment
- participate more effectively in training

The funding is provided by the Commonwealth Government through the Department of Employment, Education Training and Youth Affairs. It is particularly targeted to workers who are at risk of being displaced from industry.

For more information on providers and programs, contact your state Mining Industry Training Advisory Board (see *Appendix One: Contacts*).

Setting objectives

Many teachers and trainers have recognised the importance of asking trainees what they want to learn and incorporating their input into the objectives of the program. While it is important to ask trainees what they want to learn, this is only part of the process of designing a program. Some trainees will have a very clear idea of what they need to learn but many will have only a generalised sense that they need to improve their language, literacy and numeracy skills.

It is the job of the workplace communication skills teacher, assisted by mine training personnel, to set clear goals both for individual learners and for the program as a whole.

The program objectives should be negotiated between the workplace teacher, the training manager and/or training committee and the relevant manager.

The course objectives will be refined as the program proceeds and the teacher becomes more familiar with the specific skills and needs of the operators and with the language, literacy and numeracy demands of the mine.

In the process of negotiating objectives related to reading, the workplace communication skills teacher should discuss the importance of writing plain English documents. If mine documents, such as the manager's rules or safe working procedures, have not been written in plain English, it may be unrealistic to expect operators to be able to read them.

Part 2 *Numeracy in the Workplace* and Part 3 *Language and literacy in the workplace* will assist the workplace communication skills teacher to set objectives for the program.

Program objectives may include:

Objectives related to writing	eg:	Trainee should be able to complete a 103 statutory inspection form
Objectives related to reading	eg:	Trainee should be able to read relevant safe working procedures
	NB	The texts that operators need to read are much more complex than the texts they need to write
Objectives related to spoken communication	eg:	Trainee should be able to understand a spoken explanation
Objectives related to numeracy	eg:	Trainee should be able to measure out a 3-4-5 triangle in order to form a right angle
Objectives related to affective goals	eg:	Trainee should develop confidence to undertake on-the-job tasks and tasks in the training context
Objectives related to computer literacy	eg:	Trainee should be able to retrieve information from a database
Objectives related to learning goals	eg:	Trainee should develop memory and retention strategies

Information for language, literacy and numeracy teachers

If you appoint a teacher to conduct communication skills training at your mine you will need to:

- assist the teacher to develop a general understanding of the mine operations
- assist the teacher to develop a detailed understanding of the work done by operators
- provide some guidance on the texts that operators at your particular mine need to read and write
- assist the teacher to gather samples of texts

- provide some guidance on the numeracy skills that operators need
- assist the teacher to develop an overview of current and planned training for operators
- provide opportunities for the teacher to convince all employees of the benefits of communication skills training
- provide a glossary of mining terms

PLANT OPERATOR

7.4 What do operators do?

This section provides a basic summary of the work performed by operators. You can use this to assist language, literacy and numeracy teachers who have no prior experience of the Coal Industry. You will then need to provide site-specific information for the teacher.

Terminology:

The term *operator* covers a wide range of activities in black coal mining. A variety of terms are used within coal mines to describe operators:

- mining technician
- washplant operator
- production staff
- feds

Basic operations:

There are three basic operations in which operators are involved:

(i) underground mining

(ii) open cut mining

(iii) coal handling and preparation plants (CHPP)

Underground mine

An operator in an underground mine will perform a range of duties relating to the extraction of coal. In a longwall mine there are two main operations:

(i) Development

Development crews:

- drive roadways in preparation for the installation of a longwall
- operate continuous miners, roof bolting equipment, shuttle cars and load-haul-dump vehicles to clear roadways
- perform various support activities eg stonedusting, extending vent tubes/waterlines, extending conveyor belts, erecting water/stonedust barriers, moving laser, installing trickle duster

(ii) Longwall operations

Longwall crews:

- operate the shearer which cuts the coal via a remote control keypad
- move the hydraulic chocks which support the roof while the coal is being cut via keypads

Other underground coal extraction methods include bord and pillar and place change methods. These methods operate with continuous miner crews.

Open cut mine:

Operators in an open cut mine will perform a range of duties. They can:

- operate a range of equipment such as drillrigs, shovels, dozers, graders, scrapers, bucketwheels and coal crushers
- conduct shotfiring operations
- operate a dragline
- drive a dump truck or water truck

Washplant operators

Washplant operators are involved in the process of getting coal into the CHPP which involves:

- washing the coal
- stockpiling the coal
- loading the coal onto trains or trucks

Washplant operators operate stackers/reclaimers or bulldozers to:

- maintain ROM (run of mine or unwashed coal) and product stockpiles
- take coal from stockpile to washplant or for loading

Washplant operators also:

- operate and maintain washplant
- load trains or trucks

In some mines washplant operators are predominantly tradespeople. In other mines the teams consist of both tradespeople and operators.

7.5 A training checklist

The following checklist provides a summary of the issues covered in this trainer's guide. When establishing a program ask yourself these questions:

- Does the training program address both current and future needs of the trainees?
- Does the training program address the numeracy skills and concepts that trainees need? (see Section 2)
- Does the training program develop the spoken communication skills required by the trainees? (see Section 3.3)
- Does the training program include the texts that the trainees will need to read? (see Section 3.4)
- Does the training program develop the written skills relevant to the trainee needs? (see Sections 3.4 and 3.6)
- Does the training program develop appropriate computer skills? (see Section 3.5)
- Does the training program identify the language, literacy and numeracy demands of the competency standard? (see Section 6.3)
- Does the training program develop both skills and knowledge?
- Does the training program use language accessible to the trainees? (see Sections 3.4 and 4)
- Does the training program relate language, literacy and numeracy to relevant contexts?
- Does the training program structure each training session effectively? (see Section 5.2)
- Does the training program use training aids effectively? (see Section 3.6)

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APPENDICES

APPENDIX 1

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APPENDIX 2

Contacts

A ADVICE ON WORKPLACE TRAINING

Your Mining Industry Training Advisory Body (ITAB) can provide:

- advice on applying the competency standards at your enterprise
- assistance in writing submissions
- advice/assistance on accrediation of courses and training provider registration
- identification of priorities for State Government funding
- advice on available course providers
- Best Practice training standards for course development and delivery

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B FUNDING FOR LANGUAGE, LITERACY AND NUMERACY PROVISION

The Workplace English Language and Literacy Program provides funding for workplace-based language, literacy and numeracy training and/or resource development projects in industry. The program aims to meeting the needs of workers whose level of language, literacy or numeracy skills are creating a barrier to accessing training.

For more information contact:

National Program Manager
Workplace English Language and Literacy Section
Language and literacy Branch
Department of Employment, Education and Training and Youth Affairs
GPO Box 9880
CANBERRA ACT 2601

C WORKPLACE COMMUNICATION SKILLS PROGRAMS

Contact a language, literacy and numeracy provider in your area, such as

- the workplace services unit of AMES
- the TAFE college in your local area
- community colleges in your local area
- private providers

The contact for NSW AMES is:

NSW AMES
WorkCom
Level 2, 2 Jacobs Street
Bankstown 2200

APPENDIX 3

Useful resources on language, literacy and numeracy

ANTA, 1997. *Better Training: Addressing English Language, Literacy and Numeracy in Vocational Education and Training*, ANTA, Melbourne.

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Many workplace trainers are aware that some of their trainees have language, literacy and numeracy difficulties. This trainer's guide is designed for Category 1 and Category 2 trainers in the coal industry who want to understand more about the language, literacy and numeracy demands of their workplace and off-the-job training.

Annabelle Lukin is a curriculum consultant with NSW AMES. This guide was written as part of a nine-month research project investigating the language, literacy and numeracy demands of restructuring in the black coal sector.

ISBN 0-7310-1850-8

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